

July 8, 1999

ERM EnviroClean-  
Southwest, LLC

Ms. Diane Dudley  
Johns Manville International, Inc.  
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Littleton, Colorado 80127

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Suite 200  
Metairie, Louisiana 70002-3663  
(504) 831-6700  
(504) 831-6742 (fax)

RE: Literature Review, Second Quarter 1999 (2Q99)  
Job No. 6032-15  
Remedial Options for Cementitious ACM  
Johns Manville International, Inc.  
Marrero, Louisiana



Dear Ms. Dudley:

ERM EnviroClean-Southwest, LLC (EnviroClean) is pleased to provide this second quarterly update of alternative options for encapsulation of cementitious asbestos containing material (ACM) on residential and school properties in the Marrero, Louisiana area. This letter report will focus on additional options identified subsequent to the first quarterly report dated March 15, 1999, for remediation of driveways, sidewalks, playgrounds, and schoolyards constructed of ACM. The following new options were selected from a variety of sources including trade journals, library references on the internet and mailers received from encapsulation technology companies:

- Acrylic Concrete Sealer ST 1040-i2, a single component acrylic polymer;
- Xylene Seal, a solvent based combination of modified thermoplastic resins;
- GE-50, a plural-component polyurea elastomer; and
- C-40 LV, a two-component epoxy/polysulfide resin compound.

A brief discussion of each option is provided in the following sections. Additional information on each option is provided in Attachment A.

#### *Acrylic Concrete Sealer ST 1040-i2*

ST 1040-i2 is a single component acrylic polymer combined with fast evaporating solvents. Installation includes surface preparation and application of one coat by roller, brush, or spray. The coating will not significantly increase the elevation of the existing surface. Surface preparation involves removal of grease, dirt, oil, wax and loose material or scrubbing with an acid etch and rinse. The concrete surface must be dry in order to apply the polymer effectively. ST 1040-i2 can be applied readily to garage floors, driveways, and patios. Driveways will be accessible to light vehicular traffic within 30 minutes.

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16300 Katy Freeway  
Suite 300  
Houston, Texas 77094-1611  
(281) 579-1135  
(281) 579-3619 (fax)

A member of the Environmental  
Resources Management Group

### *Xylene Seal*

Xylene Seal (SS-300 and SS-600) is a solvent based combination of specially modified thermoplastic resins formulated specifically for concrete, brick, mortar, stucco, stone, and plaster. Installation includes surface preparation and application of a base coat (SS-300) followed by a top or finish coat (SS-600). Surface preparation includes removal of grease, dirt, and loose material or scrubbing with an acid etch and rinse. The concrete to be sealed should be allowed to dry prior to product application. Spraying is the preferred method of application although brushing or flood coating is also acceptable. Two applications are required; however, the top coat can be administered approximately 2 hours after the base coat. Xylene Seal can be easily applied to garage floors and driveways. Driveways will be accessible to light vehicular traffic within one day of installation.

### *GE-50*

GE-50 is a plural component polyurea elastomer based on amine-terminated polyether, amine chain extenders, and isocyanates. Installation includes surface preparation and application of a single coat. Surface preparation involves removal of grease, dirt, and loose material or scrubbing with an acid etch and rinse. A primer may be required, subject to type and or condition of the existing surface. GE-50 can be applied to damp surfaces and sprayed directly on water or ice. The coating will measure approximately 16 mils thick; therefore, the material will not significantly increase the elevation of the existing surface. GE-50 can be applied to garage floors, driveways, and under homes. Driveways will be accessible to light vehicular traffic within 12 hours of application.

### *C-40 LV*

C-40 LV is a two-component epoxy/polysulfide resin compound designed to penetrate, fill, and protect concrete surfaces. Installation includes surface preparation and application of two coats. Surface preparation involves removal of grease, dirt, and loose material by sandblast, shotblast, or acid etch. C-40 LV must be applied to dry surfaces. The two coats can be applied with a brush, roller, or airless sprayer with approximately 8 hours of drying time between coats. The first coat must be completely dry before the second coat is applied. The coating will not significantly increase the elevation of the existing surface. C-40 LV can be applied to garage floors, driveways, and patios. Driveways will be accessible to light vehicular traffic within 8 hours.

### *PREVIOUS APPLICATIONS OF REMEDIAL TECHNOLOGIES*

Upon identification of the above remedial alternatives, EnviroClean contacted each manufacturer or vendor to inquire about previous applications. The following is a summary of each product's historical applications as reported by representatives from each manufacturer/vendor.

- ST 1040-i2 by Image 2000 has been applied in several interior and exterior residential settings including concrete floors, sidewalks, and patios.
- Xylene Seal by FSM Corporation has been used on decks, floors, driveways, walkways, steps, buildings, and bridges including surfaces at Texas Stadium in Dallas, Texas.
- GE-50 by Global Encasement, Inc. has been used as an encapsulant for asbestos and lead paint and as an interior and exterior concrete coating for floors and driveways.
- C-40 LV by Specco Industries, Inc. has been used on bridge seats and decks, parking decks, and industrial floors.

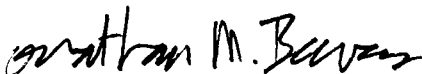
#### *COST COMPARISON OF REMEDIAL OPTIONS*


A complete cost for each of the remedial options has been estimated to facilitate a cost comparison. For cost estimating purposes, remediation of 1,000 driveways has been assumed as the scope of work. Each driveway is assumed to be 12 ft. x 30 ft. EnviroClean assumed that a gravel drain with perforated pipe would be constructed along 20% of the driveways to address potential drainage issues. Cost estimates are based on unit cost quotes provided by qualified vendors and civil construction industry-accepted cost estimating procedures. A summary of estimated probable costs for each technology is provided in Table 1.


EnviroClean appreciates the opportunity to work with Johns Manville International, Inc. on this project. If you have any questions, please do not hesitate to call.

Sincerely,

ERM EnviroClean-Southwest, LLC

  
Jonathan M. Beevers

  
R. Brent Bray, P.G.  
Senior Associate

  
Brent M. Jones, P.E.  
President

Attachments

JMB/RBB/BMJ:dsd

Table 1  
Cost Comparison of Remediation Options (1,000 Driveways)<sup>1</sup>  
2Q99 Literature Review

	Unit Material Cost (per sq ft)	Material Cost	Const'n Cost <sup>2</sup>	Transportation and Disposal Cost <sup>3</sup>	Replacement Cost <sup>4</sup>	Total Cost
ST 1040-i2	\$0.09	\$32,400	\$162,000	\$80,000	\$36,300	\$310,700
Xylene Seal	\$0.07	\$25,200	\$108,000	\$80,000	\$28,200	\$241,400
GE-50	\$0.59	\$212,400	\$1,062,000	\$80,000	\$237,900	\$1,592,300
C-40 LV	\$0.44	\$158,400	\$792,000	\$80,000	\$177,400	\$1,207,800

Notes:

- 1) Costs were based on remediating 1000 driveways (12' x 30') and the manufacturers suggested thickness.
- 2) Where the cost of installation was not provided, a factor of 5.0 was applied to account for this cost.
- 3) The cost for disposal of loose ACM debris for the overlay and coating "capping and containment" options is negligible in comparison to the material and installation costs. Disposal cost is based on an assumed average disposal volume of 0.5 cubic yards of loose material per property (0.5" on a 12' x 30' driveway) and a transportation and disposal cost of \$20 per cubic yard.
- 4) For a conservative evaluation of maintenance costs, total replacement of the materials was assumed at the end of the product's estimated useful life (without maintenance). The replacement cost (equal to the original construction cost) was adjusted to present value using a discount rate of 12%.

*Attachment A*

**ERM EnviroClean-Southwest, LLC**  
**3501 N. Causeway Boulevard, Suite 200**  
**Metairie, Louisiana 70002**  
**(504) 831-6700**

# **IMAGE 2000 Superior Industrial Coatings**

## **About *Image 2000*...**

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In 1986, Image 2000 started in Northern California as an industrial floor coating company specializing in automotive service departments. Over the years, after having coated many hundreds of thousands of square feet of concrete, we found that there was an inconsistency in the quality, reliability, and effectiveness of the products that we were using. We tried large national manufacturers and smaller local companies. Finally we found a company that would manufacture to our exacting specifications, each and every time. We are now making these superior products available to everyone.

Many architects specify our products in their blueprints.

Our goal is to continue to provide the best possible products at the most reasonable prices possible.

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# **IMAGE 2000 Superior Industrial Coatings**

## **Contact *Image 2000*...**

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By Phone: (209) 736-1100

By Fax: 209 736-9258

By E-mail: [tom@image2000.com](mailto:tom@image2000.com)

By Mail: Image 2000  
Post Office Box 753  
Ione, CA 95640

**IMAGE 2000****Superior Industrial Coatings****Product Specification Sheet****Acrylic Concrete Sealer ST1040-i2**[Home](#)[E-mail](#)[About](#)[Contact](#)[Prices](#)[Comment  
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**Description:** A single component, top quality acrylic polymer combined with fast evaporating solvents for use over properly prepared concrete floors and other concrete surfaces. This product dries to a clear, colorless, abrasion and chemical resistant film that provides a weatherproof sealer that resists sun, rain, most acids, industrial chemicals, oil and grease.

**Advantages:** Single component product that is very easy to use, no mixing. It is clear so it is easy to cut in around edges. It cost less than urethane or epoxies. It has fairly good chemical resistance and prevents oils and chemicals from soaking into concrete thus easy to clean.

**Disadvantages:** Color not available with this product, just clear, cannot hide flaws in concrete. Not quite as chemically resistant as certain epoxies or urethane.

**Usage:** Provides a clear coating over concrete floors, walks, patios, etc. , that is easy to keep lean and is very easy to apply. (Almost error proof.)

**Preparation:** Surface to be coated must be cured, firm, dry and clean; free of dust, oil, grease, and wax. Loose paint, chalk, rust or scale must be removed. Any contamination will adversely affect the performance of the coat

**Application:** Product can be applied by brush, roller, or sprayed. Coverage 300 to 400 square feet per gallon , depending on porosity, texture and method of application. Apply coating only when air and surface temperature is above 50° F.

**Characteristics:**

**Pot life** – 8 hours at 70 degrees F.

**Shelf life** – 1 year.

**Clean up** – Xylene or lacquer thinner.

**Dry time** – to touch 5 to 10 minutes at 70 degrees F and 50% per cent relative humidity.

**Thorough dry** 25 minutes.

**Caution:** Keep away from children. Do not take internally. If taken, contact physician. When spraying a protective mask should be worn to avoid inhaling. In the event of eye contact, flush eyes with water for 15 minutes and seek medical attention. **KEEP FROM FREEZING.**

# IMAGE 2000 Superior Industrial Coatings

	1 to 23 gallons	24 to 47 gallons	48 to 99 gallons	100 to 274 gallons	275 and over
Home	<u>Chemical Resistant Urethane</u>	@ \$93.00	@ \$ 89.00	@ \$72.00	@ \$59.00 By quote
E-mail	<u>Epoxy High Build #8090i2</u>	@ \$78.00	@ \$64.00	@ \$49.00	@ \$46.00 By quote
About	<u>Acrylic Concrete Sealer ST1040i2</u>	@ \$47.00	@ \$39.00	@ \$31.00	@ \$27.00 By quote
Contact	<u>Elastomeric Water-Proofing #3100i2</u>	@ \$47.00	@ \$39.00	@ \$31.00	@ \$27.00 By quote
Products	<u>Tank-Tuff R-1 Rust Ender</u>	@ \$73.00	@ \$59.00	@ \$43.00	@ \$42.00 By quote
Comment Form	<u>Epoxy 1100</u>	@ \$69.00	@ \$55.00	@ \$41.00	@ \$38.00 By quote
	<u>Epoxy 1200</u>	@ \$68.00	@ \$54.00	@ \$40.00	@ \$37.00 By quote
	<u>Epoxy VL-104</u>	@ \$68.00	@ \$54.00	@ \$40.00	@ \$37.00 By quote
	<u>Thinner RT130</u>	@ \$22.60	@ \$19.60	@ \$17.25	@ \$15.40 By quote
	<u>Reducer RT125</u>	@ \$22.60	@ \$19.60	@ \$17.25	@ \$15.40 By quote

Roller Skins, 18" - Package of 6 @ 7.25 = \$43.50  
 Roller Cages, 18" - . . . . . @ 18.50 Each

All prices are F. O. B.  
 Oakland, California, USA  
 Plus any applicable taxes.

*Complete catalog \$90.00 refundable with any order.*

# *Services By Smith*

## *300*

### *Exterior Brick & Concrete Sealer*

### *Penetrating Masonry Protection*

- • WATER CLEAR
- 
- • NON-YELLOWING
- 
- • WATER REPELLANT
- 
- • CHEMICAL RESISTANT
- 
- • ENVIRONMENTALLY SAFE
- 
- • WITHSTANDS UV ATTACK
- 
- • CONTROLS EFFLORESCENCE

*Protect Your Future---*      *Today*  
*PRODUCTS AND SERVICES TO SOLVE PROBLEMS*

## SS-300 – Data Sheet

**Description & Uses:** 300 is a solvent based combination of specially modified thermoplastic resins. The unusually small size of the molecular structure is one of the keys to its unique performance. It is a ready to use product formulated specifically for concrete (poured, pre-cast or block), brick, mortar, stucco, stone and plaster. In actual weather test, 300 has shown no deterioration from ultraviolet radiation, ozone, salt spray, water or acid rain for periods as long as 11 years. 300 has been in accelerated weather testing for an equivalent of over 25 years and has shown no breakdown or yellowing. When cured, the sealant remains water-clear even at temperatures to 400 degrees F. 300 has exceptional resistance to UV damage and excellent hydrophobic qualities. It's resistance to chemicals and fumes protects against surface degradation and greatly extends the service life of the treated surface. When applied to either horizontal or vertical surfaces, 300 provides both surface and subsurface protection against the damaging attacks of water borne salts, acids and alkalies. 300 will protect against gas and oil stains. It protects against acid rain on building facades, parking structures, and engineered concrete materials. It's long lasting hydrophobic effect reduces efflorescence, leaching, mildew staining, and freeze/thaw spalling and crumbling. It's high perm rate allows ready transmission of moisture vapor.

**Efflorescence:** 300 will effectively control efflorescence for long periods of time. This is a unique benefit for problem surfaces such as concrete brick pavers and horizontal masonry walls. This is accomplished by providing a seal well below the surface keeping ugly efflorescing minerals out of sight.

**Preparation:** Surface imperfections and cracks larger than 1/16" should be repaired with caulk or other suitable filler material. All caulks and repair materials should be in place and cured prior to the application of the 300. The surface to be treated must be clean and free of dirt, dust, oils and other contaminants. Cleaning compounds such as a PH Stripper can be used where necessary, followed by a thorough rinsing with clear water. Older concrete surfaces may need to

be power washed with high pressure water to assure removal of oils and contaminants. Contaminants will interfere with penetration and will show through the clear sealer after the job had been completed. The surface to be sealed should be allowed to dry prior to product application. A test application is always a good idea.

**Application:** 300 should be applied as packaged. Do not dilute or alter the material in any way. Application may be accomplished by spraying or brushing. Do not roll. Spraying is the preferred method of application. Spraying equipment should be fitted with solvent resistant hoses and gaskets. Do not use a roller for application. Allow a drying time of 30 to 60 minutes (wait one to two hours for extremely porous surfaces) before attempting the second application. Allow 12 hours before usage. Full cure time is 96 hours. Clean equipment with lacquer thinner.

**Coverage Rates:** Porosity and texture of the surfaces will determine the amount necessary for effective treatment. The total amount of product required (for two applications) will range between 300- 600 sq. ft. per gal. 300 will penetrate deeply into most surfaces. Because of this characteristic, it may be necessary to limit the amount of product used on first application. This can be accomplished by applying the first application at the rate of 1 gallon/ 1,000 sq. ft. Allow this to dry completely before making the second application.

**Limitations:** 300 is a xylene based product. If used in conjunction with other products, this should be limited to other xylene based products such as 600. It should not be used on asphalt or vinyl types of materials. Store material away from extreme heat and freezing temperatures in sealed containers. Do not allow material to freeze.

**Precautions:** The product should not be applied near open flame or extreme heat. Provide adequate ventilation to avoid buildup of solvent fumes. For interior applications, applicators should wear approved NIOSH/MSHA breathing equipment with organic vapor cartridges and pre-filters. Tyvek suits, gloves, and eye protection are also recommended.

**MATERIAL SAFETY DATA SHEET****0-300****Exterior Brick & Concrete Sealer**

SERVICES BY SMITH  
12224 ROXIE DRIVE BLDG A  
AUSTIN, TEXAS 78729

(512) 335-0331

Preparation Date:

3/1/92

Section II. Hazardous Ingredients	PEL	TLV
VM & P Naptha 8030-30-6	100	400 ppm
Residual Isobutyl 97-86-9	NE	NE
Xylene 1330-20-7	100	100
Aromatic Solvent Naptha 64742-95-6	NE	NE

**Other limits Recommended**

Skin

**Section III. Physical Data**

Boiling Point:	149°C/300°F
Specific Gravity (H <sub>2</sub> O=1):	0.81
Vapor Pressure (mm Hg.):	7 est. 20°C/68°F
Melting Point:	no data
Vapor Density (Air=1):	Greater than 1
Evaporation Rate (Butyl Acetate=1):	Greater than 1
Solubility in Water:	Negligible
Appearance and Odor:	Clear colorless, hydrocarbon odor.

**Section IV. Fire and Explosion Hazard Data**

Flash Point (method used):	106°F pmcc
Flammable Limits:	No data
LEL: 1.0 est.	UEL: 7.0 est.
Extinguishing Media:	Alcohol Foam CO <sub>2</sub> Dry chemical.

**Special Fire Fighting Procedures:** Wear self contained breathing apparatus & full protective gear.

**Unusual Fire and Explosion Hazard:** Vapors can travel to a source of ignition and flash back.

**Section V. Reactivity Data**

Stability:	Stable
Conditions to avoid:	Excessive heat.
Incompatibility:	

**Hazardous Decomposition or By-products:**

Hazardous Polymerization:	Will not occur
Conditions to Avoid:	NA

**Section VI. Health Hazard Data**

Route(s) of Entry	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes
Health Hazards: If inhaled can cause slight headache. Slight irritation to skin. If ingested see a physician. Repeated overexposure to VM & P can cause central nervous system effects.			
Carcinogenicity	NPT?	IARC?	OSHA?
	No	No	VM&P Naptha

**Signs and symptoms of exposure:** Headache, minor skin irritation, and slight eye irritation.

**Medical Conditions:**

Not known

**Emergency and First Aid Procedures:** If inhaled move subject to fresh air. Give artificial respiration if breathing has stopped. See a physician.

**Section VII. Precautions for Safe Handling and Use. (Steps to be taken if released or spilled):** Eliminate ignition sources.

Wear self contained breathing apparatus MSHA/NIOSH approved for large spills in confined areas. Keep spills out of municipal sewers and open bodies of water.

**Waste Disposal Method:** Incinerate liquid and contaminated diking material according to local, state or federal regulations.

**Handling and Storage Precautions:** Max. Storage temperatures: 60°C/140°F. Limit storage of flammable material to approved areas. Ground all containers when transferring materials.

**Section VIII. Control Measures**

**Respiratory Protection:** Wear suitable respirator (MSHA/NIOSH-approved or equivalent) where exposure limits are exceeded.

**Ventilation:** At point of contaminant release.

**Protective Gloves:** Impervious.

**Eye Protection:** ANSI Z-87.1 or approved equivalent chemical splash goggles.

**Other Protective Clothing or Equipment:** Eye wash facility. Safety shower.

**Work/Hygienic Practices:** Wash thoroughly after handling.

## SS-600 Data Sheet

**Description & Uses:** 600 is a solvent based combination of specially modified thermoplastic resins and their esters. It is a ready to use product which may be used on a variety of substrates. It may also be used as a top or finish coat for several of the other products. In these situations, it is used where a high degree of chemical or wear resistance is required.

This product should be used on floors where high wear and impact resistance is required. 600 penetrates into the concrete approximately 1/8" and is almost impossible to abrade or wear through.

600 exhibits excellent resistance to damage caused by ultraviolet radiation, ozone, salt spray, water, or acid rain and has shown no breakdown or yellowing. When cured, the sealant remains water-clear even at temperatures to 400 degrees Fahrenheit.

When applied to either horizontal or vertical surfaces, 600 provides surface protection against intrusion by moisture from the under side. It will withstand a significant amount of hydrostatic pressure from the back or under side. 600 should not be used to protect against the esthetic damage caused by efflorescing. When efflorescence is a problem, 300 should be applied first to provide a deep sub surface seal prior to the application of 600. It's long lasting hydrophobic effect reduces leaching, mildew staining, and freeze/thaw spalling.

600 may be used as a top coat over 200, 300, or 415 when additional chemical or high wear resistance is required.

**Preparation:** Surface imperfections and cracks larger than 1/16" should be repaired with caulk or other suitable filler material. All caulks and repair materials should be in place and cured prior to the application of 600. The surface to be treated must be clean and free of dirt, dust, oils and other contaminants. Cleaning compounds such as 110 can be used if necessary, followed by a thorough rinsing with clear water. Older concrete surfaces

of oils and contaminants that have built up over the years. These will interfere with penetration and will show through the clear sealer after the job has been completed. The surface to be sealed should be allowed to dry prior to product application.

**Application:** 600 should be applied as packaged. Do not dilute or alter the material in any way.

Application may be accomplished by spraying, brushing, or flood coating. Do not use a roller.

Spraying is the preferred method of application.

Spray equipment must be fitted with solvent resistant hoses and gaskets. Two applications are required. An application of 300 may be substituted for the first application of 600. Allow a drying time of 2 hours before making the second application. The second application may require less product for surface coverage. Allow 12 hours before usage. Full cure time is 96 hours.

Equipment may be cleaned with lacquer thinner.

**Coverage Rates :** Porosity, texture of the surface, and desired film build will determine the amount of material necessary for effective treatment. Total product required (for two applications) can range 200-600 sq. ft. per gallon.

**Limitations :** 600 should not be used on vertical surfaces to eliminate or control efflorescence, or on surfaces where there is a potential for damage caused by efflorescence. 300 should be used for the first application in this situation. 600 should not be used on asphalt or vinyl surfaces. If 600 is used as a top coat over any naphtha or water based product, those products must be completely cured prior to the application of 600. Store material away from extreme heat and freezing temperatures in sealed containers. Do not allow material to freeze.

**Precautions :** the product should not be applied near open flame or extreme heat. Provide adequate ventilation to avoid buildup of solvent fumes. For interior applications, applicators should wear approved NIOSH/MSHA breathing equipment with organic vapor cartridges and pre-filter. Tyvek

**MATERIAL SAFETY DATA SHEET****0~600****Chemical Resistant Finish**

SERVICES BY SMITH  
12224 ROXIE DRIVE BLDG A  
AUSTIN, TEXAS 78729

(512) 335-0331

Preparation Date:

3/1/92

Section II. Hazardous Ingredients		PEL	TLV
Residual Ethyl Acrylate	5	5 ppm	
Residual Butyl Methacrylate		NE	NE
Residual Methyl Methacrylate		100	100 ppm
Xylene		100	100 ppm

**Section III. Physical Data**

Boiling Point:	110C/230F
Specific Gravity (H <sub>2</sub> O=1):	1.06
Vapor Pressure (mm Hg.):	22 Estimated
Melting Point:	No Data
Vapor Density (Air=1):	Greater than 1
Evaporation Rate (Butyl Acetate=1):	Greater than 1
Solubility in Water:	Negligible
Appearance and Odor:	Clear, colorless, sour, burnt odor.

**Section IV. Fire and Explosion Hazard Data**

Flash Point (method used):	104F pmcc
Flammable Limits:	480C/896F
LEL: 1.1 estimated	UEL: 7.1 estimated
Extinguishing Media:	Alcohol Foam, CO <sub>2</sub> dry chemical, water spray.

**Special Fire Fighting Procedures:** Wear self contained breathing apparatus and full protective gear.

**Unusual Fire and Explosion Hazard:** Vapors can travel to a source of ignition and flash back.

**Section V. Reactivity Data**

Stability:	Stable
Conditions to avoid:	Excessive heat
Incompatibility:	NA

**Hazardous Decomposition or By-products:** Not known

**Hazardous Polymerization:** Will not occur  
**Conditions to Avoid:** Strong oxidizers.

**Section VI. Health Hazard Data**

Route(s) of Entry	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes

**Health Hazards:** When inhaled, solvent vapor mist can cause headache, nose, throat, and lung irritation. Prolonged contact with skin may cause allergic reaction. Eye contact can cause irritation and transient corneal injury.

Carcinogenicity	NPT?	IARC?	OSHA?
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EA has been listed by the NPT and the IARC as a possible cancer causing agent.

**Signs and symptoms of exposure:** Headache, Drowsiness, dizziness, nausea, loss of consciousness, irritation to nose, throat and lungs.

**Medical Conditions:** Not known

**Emergency and First Aid Procedures:** Move subject to fresh air. See a physician. Flush eyes with water. Clean exposed skin areas thoroughly. If swallowed drink 2 glasses of water and see a physician.

**Section VII. Precautions for Safe Handling and Use.** (Steps to be taken if released or spilled): Keep spectators away. Eliminate ignition sources. Wear self contained breathing apparatus.

**Waste Disposal Method:** Incinerate liquid and diking materials according to local, state and federal regulations.

**Handling and Storage Precautions:** Limit storage of flammable material to approved areas.

**Section VIII. Control Measures**

**Respiratory Protection:** Wear suitable respirator (MSHA/NIOSH-approved or equivalent) where exposure limits are exceeded.

**Ventilation:** At point of contaminant release.

**Protective Gloves:** Impervious.

**Eye Protection:** ANSI Z-87.1 or approved equivalent chemical splash goggles.

**Other Protective Clothing or Equipment:** Eye wash facility. Safety shower.

**Work/Hygienic Practices:** Wash thoroughly after handling.

## Total Surface Protection !

When you need high performance,  
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promptly.

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12224 Roxie Drive  
Building A  
Austin, TX 78729

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Fax: 512-335-1717  
Email: [svcbysmith@aol.com](mailto:svcbysmith@aol.com)

*Services By Smith*

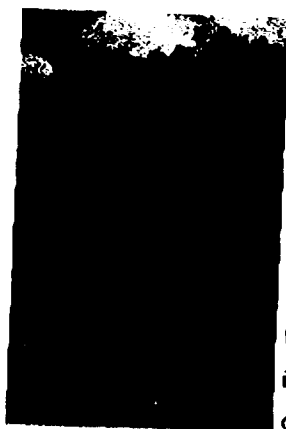
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## Our Mission!



Today's Architects and Designers use many different types of materials to satisfy our desires. From marble, slate, Mexican tiles, terrazzo & ceramics, to stamped concrete, wood, concrete, aggregate, travertine, limestone, cantera stone and others. These are just a few of the surfaces that need to be sealed, finished or protected from many environments.

Many of the traditional products just do not meet the needs of today's surfaces for protection.

Services By Smith has teamed up with the leading chemists from Fuhr International and suppliers like Dow Corning, Rohm & Haas, Ciba Chemical, McWhorter Technologies, Shell Chemical and more to develop the newest and highest performing products available today.

Years of Research and Development, along with extensive testing has brought us the newest in technological advances to offer to you for your needs.

## Partial Product Selection Guide

Series 300: Exterior Brick & Concrete Sealer is a clear, non-yellowing sealer that is extremely effective against the harmful effects of sunlight. For use on brick, stamped concrete, blocks and most cementitious surfaces. For control of efflorescence, this is the product of choice.

Series 600: Concrete Chemical Resistant Finish is a ready to use sealer specifically formulated for use where heavy concentrations of acids or other contaminants are present. For high traffic areas where skid resistance is required this is the product of choice.

Series 615: Heavy Duty Industrial Sealer that prolongs the life of masonry, protecting the surface from concentrated acids, gasoline, oils, salts, alkalis, chemical spills, and water. This Sealer forms an extra tough, durable, clear, plastic film that is impervious to both liquid and vapor, and exhibits exceptional resistance to hydrostatic pressure. 615 provides a non-slippery satin finish and superior water proof barrier that is resistant to ultraviolet radiation and harsh chemicals.

Series 100 & 900: A reactive material that has been especially formulated for Commercial Buildings, Parking Decks, and Bridge Structures. Contains 20% or 40% alkylsilane in solvent. Designed to penetrate and chemically react with masonry upon application. Treated substrates are highly hydrophobic and retain their original appearance. Conforms to the requirements of NCHRP 244 and ASTM 259, Ion Chloride Penetration Testing.

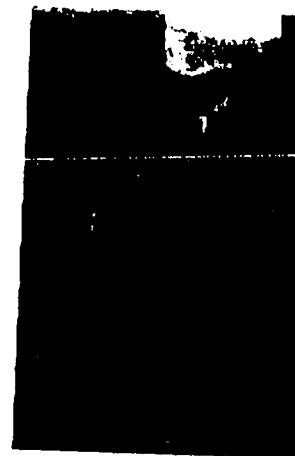
## Cleaners & Strippers

We offer some of the most effective cleaning systems on the market today. Our combined experience of over 50 years of cleaning allows us to solve problems for you.

We have cleaners for most all surfaces. Whether it is tile, grout, bathrooms or kitchens, to concrete driveways, patios or pool decks, we have the cleaner for these tasks.

Ask one of our Application specialists which product is the right product for you.

If you don't see a product that suits your needs, ASK US! We have a full time Development Laboratory for those special products that some jobs require. Call us TODAY!



### Services By Smith

12224 Rosie Drive  
Building A  
Austin, TX 78729  
Phone: 512-328-2188  
Fax: 512-336-1717  
Email: svcbysmith@aol.com

# *S*ERVICES BY *S*MITH

TAX ID # 74 - 2521158

12224 Roxie Dr. Bldg. 1A  
Austin, Texas 78729

(512) 335-7083  
(512) 328-8060 Westlake

June 21, 1999

Connie  
ERM  
(281) 579-8999

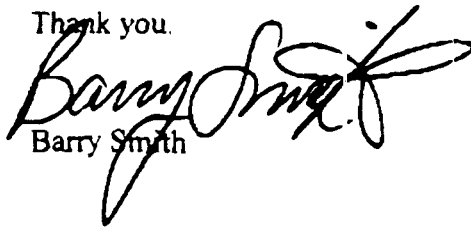
As per your request:

300 Xylene Seal @ 500:1f per gallon coverage rate will yield a sf price of 3.6 cents/*SF*  
based on Drum quantities @ \$18.00 per gallon.

600 Xylene Seal @ 500:1SF per gallon coverage rate will yield a sf price of 3.8 cents/*SF*  
based on Drum quantities @ \$18.00 per gallon.

Please let me know if there is any other information that you need.

Thank you.

  
Barry Smith

# GLOBAL Encasement, Inc.

ENVIRONMENTALLY ADVANCED SOLUTIONS FOR TOXIC AND HAZARDOUS  
MATERIAL ABATEMENT<sup>SM</sup>



## FACSIMILE TRANSMITTAL SHEET

to:	from:
Connie Van Hoesel	Sue Bardsley
Company:	date:
ERM Southwest	June 21, 1999
fax number:	total no. of pages including cover:
281-579-8988	11
Phone number:	sender's reference number:
281-579-8999	
Re:	Your reference number:
Concrete Driveway Products	

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

### NOTES/COMMENTS:

Connie, As promised here is MSDS and Product Data on our GE—50 Polyurea product that may be a solution for the asbestos containing concrete driveway challenge. Coverage at 100 sq. ft./gallon will yield 16 dry mils.

Our contractor price is \$58.95 per gallon. Quantity discounts can apply. (material cost only)

I'm in the process of getting you more technical data as we believe a primer may be needed first. I hope this information will be helpful to you.

Thanks for calling us.

$$\frac{58.95}{\text{gal}} \times \frac{1 \text{ gallon}}{100 \text{ sq. ft.}} = 58.95¢/\text{sq. ft.}$$

# GLOBAL Encasement, Inc.

## Technical Data

### GE-50

7/9 Waterproof protective membrane

Revised March 1999

#### PRODUCT DESCRIPTION

GE-50 is a state of the art, high performance sprayed plural component polyurea elastomer. This system is based on amine-terminated polyether resins, amine chain extenders and isocyanates. It provides a flexible, extremely tough, monolithic membrane with excellent water and chemical resistance.

#### RECOMMENDED USES

- Earthen containment lining used with or without geotextile fabric.
- Liner for concrete tanks, ponds, lagoons, reservoirs, dikes, irrigation ditches, tunnels, barges, etc.
- Membrane covering used with geotextile fabrics to encapsulate contaminants in landfill applications.
- Replace or repair failed existing sheet membrane liners.
- Steel tanks, silos and pipes.
- Protective elastomer for sprayed in place urethane foam.
- Encapsulant for styrofoam and other types of flotation.
- Encapsulant for asbestos & lead paint.
- Truckbed and undercarriage liner.
- Protective coatings for decorative products such as props, waterfalls, signage, statues, highway markings, etc.

#### FEATURES

- GE-50 is a seamless membrane that can be handled and walked on within 30 seconds or less from the time it is sprayed.
- Unlike polyurethanes and epoxies, GE-50 is hydrophobic and therefore affected very little by damp or cold surfaces. It can be sprayed directly on water or ice and has been sprayed at -40°F (-40°C) with minimal effect on tack free time.
- Due to its almost instantaneous gel time, GE-50 can be built up to any thickness in one application including vertical and overhead surfaces. Eliminates need for multicoat applications.
- GE-50 is 100% solids. No solvents, no V.O.C.'s.
- GE-50 has high temperature stability with a working temperature of up to 121°C (250°F) with intermittent temperatures up to 177°C (350°F).
- Standard 1:1 ratio, heated, plural component equipment developing 7 mPa (1000 lbs) dynamic pressure will adequately spray GE-50. These include Gusmer's model FF-1600 and H-II with either a D or GX7 gun.
- GE-50 is formulated without the use of

catalysts. This increases shelf life of the liquids in the drums as well as enhancing color and light stability in the finished product.

#### COLORS

Because of the tremendous diversity of uses for GE-50 it is manufactured as a translucent material. With factory-added tints, pigments and dyes almost any color can be achieved. It should be noted that GE-50 is an aromatic Polyurea, therefore with certain colorants over a period of time changes in color and superficial oxidation can occur. Aliphatic and other suitable top coats can be used where long-term aesthetics are of critical importance.

#### GENERAL APPLICATIONS INSTRUCTIONS

Apply GE-50 only to clean, dry, sound surfaces free of loose particles or other foreign matter. A primer may be required, subject to type and/or condition of the substrate. Consult technical service personnel for specific primer recommendations and substrate preparation procedures.

- GE-50 can be sprayed virtually at any ambient temperature. The limitations are in the ability of the application equipment to provide adequate material pressure and heat. Contact technical service personnel for specific recommendations, pricing

and availability of spray and auxiliary equipment.

- It is recommended that GE-50 be sprayed in multi-directional (north-south/east-west) passes to insure uniform thickness.

#### LIMITATIONS & PRECAUTIONS

- GE-50 is for industrial use only.
- GE-50 must be stored at temperatures between 60°F to 100°F (16°C-38°C).
- Minimum material/container temperature for spray application is 70°F (21°C).
- Avoid moisture contamination in containers. Containers should not be resealed if contamination is suspected, CO<sub>2</sub> created pressure can develop. Do not attempt to use contaminated material.

#### GENERAL SAFETY, TOXICITY & HEALTH DATA

Material safety data sheets are available on this coating material. Any individual who may come in contact with these products should read and understand the M.S.D.S.

- **WARNING:** Contact with skin or inhalation of vapors may cause an allergic reaction. Avoid eye contact of the liquid or spray mist.

# MATERIAL SAFETY DATA SHEET

## GE-50 – Component B

Distributed by: GLOBAL Encasement, Inc.  
132 – 32<sup>nd</sup> Street  
Union City, NJ 07087

HMIS Information  
Health 3\*  
Flammability 1  
Reactivity 0

Revision Date: March 31, 1999

Emergency Telephone Number (24 hr.) Chemtrec: 1-800-424-9300

### SECTION I – PRODUCT IDENTITY

Chemical Name: Mixture of amine compounds

Chemical Formula: N/A Product is a Mixture

### SECTION II – HAZARDOUS INGREDIENTS

Chemical & Common Name	CAS #	Wt %	OSHA PEL	ACGIH TLV	OTHER
Corrosive Liquid, n.o.s.					
(Tripropylene Glycol Diamine)		60-90	None established	None established	
*Chemical Identity is Proprietary)		10-40	None established	None established	
(Chemical Identity is Proprietary)		2-20	None established	None established	

\*Designates a hazardous chemical as defined by SARA Title III, Section 311, 312

### SECTION III – PHYSICAL CHARACTERISTICS

Boiling Range: 586° F	Vapor Pressure (mm Hg) 0.9 mm @ 68° F
Specific Gravity: 0.98-1.02	Vapor Density (Air = 1): 6.2
% Volatile (Volume): 0	
Volatile Organic Content (VOC): 0 grams/liter	Appearance and Odor:
Solubility (Specific Solvents): Moderate	Viscous liquid in various colors; characteristic amine odor.

### SECTION IV – FIRE & EXPLOSION DATA

Flash Point: Above 275° F (135° C)

Extinguishing Media: Dry chemical, foam, carbon dioxide, halogenated agents. Water or foam can cause frothing.

Special Firefighting Procedures: Use water to cool fire-exposed containers. Self-contained breathing apparatus, with full facepiece and protective clothing should be worn.

Unusual Fire and Explosion Hazards: None known. Reactivity: Product is stable under normal conditions.

Hazardous Polymerization: Will not occur.

Incompatibilities (materials to avoid): Will react with acids.

Conditions to avoid: AVOID MOISTURE CONTAMINATION IN CONTAINERS. CONTAINERS SHOULD NOT BE RESEALED IF CONTAMINATION IS SUSPECTED. CO<sup>2</sup> <sup>CREATED</sup> PRESSURE CAN DEVELOP. DO NOT ATTEMPT TO USE CONTAMINATED MATERIAL.

Hazardous Decomposition Products:

Combustion products: Toxic levels of ammonia. Oxides of nitrogen, carbon, and some aldehydes and ketones may also be produced.

## SECTION V – HEALTH HAZARDS

Primary Routes of Entry: Eye contact, inhalation, ingestion, skin contact.

### ACUTE HEALTH AFFECTS

**EYE CONTACT:** Will cause irritation, burning, or chemical burns.

**INHALATION:** Vapors or mist are irritating and may cause nasal discharge, coughing, and discomfort in nose, throat and chest. Severe overexposure may result in difficulty breathing, headache, nausea, vomiting, and drowsiness.

**INGESTION:** Ingestion of this product is expected to be harmful or fatal. Oral LD50 = 485 mg/kg.

**SKIN CONTACT:** This product can be toxic by dermal absorption. Dermal LDD50 = 700 mg/kg

### EMERGENCY FIRST AID PROCEDURES

**EYE CONTACT:** Wash with clean water for at least fifteen minutes, get medical attention.

**INHALATION:** Move individual to fresh air. If breathing has stopped, apply artificial respiration, get medical attention immediately.

**INGESTION:** INDUCE VOMITING immediately by giving two glasses of water or milk to drink; stick finger down throat. Never give anything to an unconscious person. Get medical attention immediately.

**SKIN CONTACT:** Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing and decontaminated shoes before reuse.

**CHRONIC HEALTH AFFECTS:** Prolonged or repeated overexposure may result in lung damage.

Medical conditions Aggravated by Exposure: Pre-existing lung or skin conditions could be aggravated by repeated exposure.

## SECTION VI – SPILL OR LEAK PROCEDURES

Steps to be taken in case material is spilled or released:

Ventilated area. Avoid breathing vapor. Use of self-contained breathing apparatus may be required in confined or enclosed areas. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Take up small spills with dry chemical absorption. Large spills may be taken up with pump or vacuum and finished off with dry chemical absorbent.

Waste Disposal Method: Dispose of material in accordance with all federal, state, and local regulations.

## SECTION VII – SPECIAL PROTECTION DATA

**Respiratory Protection:** Wear MSHA/NIOSH-approved respirator for organic vapors. Ensure workers are trained in their proper use.

**Ventilation:** Mechanical ventilation, adequate to keep exposure below TLV is recommended.

**Protective Gloves:** Neoprene or nitrile rubber.

**Eye Protection:** Goggles or full face shield.

**Other Protective Clothing or Equipment:** Eyewash fountain and safety shower should be accessible; impervious protective clothing.

## SECTION VIII – HANDLING & STORAGE DATA

Precautions to be Taken in Handling and Storage:

Store in a well-ventilated, cool, dry area. Purge with nitrogen and dose container when not in use.

Other Precautions:

Store in original container; keep tightly closed. Do not reuse container for other purposes. KEEP OUT OF REACH OF CHILDREN.

## SECTION IX – OTHER INFORMATION

**TSCA Information:** All ingredients are on the TSCA Chemical Substance Inventory.

**WHMIS Information:** Not all ingredients are confirmed on the Canadian DSL (Domestic Substances List).

The information contained herein is based on data considered to be accurate. However no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained for the use thereof. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable regarding all current regulations.

# MATERIAL SAFETY DATA SHEET

## EMERGENCY CONTACTS:

Spills, Leaks, Fire or Exposure Call Chemtrec: (800) 424-9300

Revision Date: March 31, 1999

## SECTION I – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: GE-50

Product Use: Component of polyurethane.

Company:

GLOBAL Encasement, Inc.

132 – 32<sup>nd</sup> Street

Union City, NJ 07087

(201) 902-9770

## SECTION II – COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENT(S)	% (W/W)	ACGIH TLV	CAS NO.
4, 4'-Diphenylmethane Diisocyanate (4,4' MDI)	-32	0.005 ppm	101-68-8
Modified MDI	-58	Not Listed	Not Listed
Proprietary Chemical	-5-12	Not Listed	

## SECTION III – HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

**Health Hazards:** Irritating to eyes, respiratory system and skin. Risk of serious damage to respiratory system. May cause sensitization by inhalation and skin contact. Repeated inhalation of aerosol at levels above the occupational exposure limit could cause respiratory sensitization. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons.

**Physical Hazards:** Reacts slowly with water to produce carbon dioxide that may rupture closed containers. This reaction accelerates at higher temperatures.

**Appearance:** Clear liquid.

**Odor:** None.

Read the entire MSDS for a more thorough evaluation of the hazards.

## SECTION III – HAZARDS IDENTIFICATION

**General:** In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the label where possible.)

**Inhalation:** Remove patient from exposure, keep warm and at rest. Obtain medical attention. Treatment is symptomatic for primary irritation or bronchospasm. If breathing is labored, qualified personnel should administer oxygen. Apply artificial respiration if breathing has ceased or shows signs of failing.

**Skin Contact:** Immediately flush eyes with running water for a minimum of 15 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

**Ingestion:** Do NOT induce vomiting. Provided the patient is conscious, wash out mouth with water then give 1 or 2 glasses of water to drink. Refer person to medical personnel for immediate attention.

Note to Physicians: Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

## **SECTION V – FIRE FIGHTING MEASURES**

**Fire and Explosion Hazards:** Containers may burst under intense heat. Due to reaction with water, a hazardous build-up of pressure could result if contaminated containers are re-sealed.

**Extinguishing Media:** Carbon dioxide, dry chemical, or appropriate foam. If water is used, very large quantities are required. Reaction between water and hot isocyanate may be vigorous. Contain run-off water with temporary barriers.

**Fire Fighting Procedures:** As appropriate for surrounding materials/equipment.

**Fire Fighting Protective Equipment:** Use self-contained breathing apparatus and full protective clothing (Bunker gear).

**FlashPoint:** > 230°F (110°C)

**Flammable Limits (Lower):** Not available

**Flammable Limits (Upper):** Not available

**Auto Ignition Temperature:** 240°C (464°F) (44,4' – Diphenylmethane Diisocyanate)

**Decomposition Temperature:** Not available

**Rate of Burning:** Not available.

**Explosive Power:** None.

**Sensitivity to Mechanical Impact:** None

**Sensitivity to Static Discharge:** None

**Combustion Products:** Carbon monoxide, carbon dioxide, nitrogen oxides and some HCN.

## **SECTION VI – ACCIDENTAL RELEASE MEASURES**

For major spills call Chemtrec (800-424-9300).

**Spills, Leaks, or Releases:** Clean up should only be performed by trained personnel. People dealing with major spillage should wear full protective clothing including respiratory protection. Evacuate the area. Prevent further leakage, spillage or entry into drains.

Contain and absorb large spillage onto an inert, non-flammable absorbent carrier (such as earth or sand). Shovel into open-top drums or plastic bags for further decontamination, if necessary. Wash the spillage area clean with liquid decontaminant. Test atmosphere for MDI vapor. Neutralize small spillage with decontaminant. Remove and dispose of residues. Notify applicable government authorities if release is reportable. The CERCLA RQ for MDI is 5,000 lbs. (see CERCLA in Section 15).

**Preparation of Decontamination Solution:** Prepare a decontamination solution of 0.12-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's material safe data sheets when preparing and using solution.

**Use of Decontamination Solution:** Allow deactivated material to stand for at least 30 minutes before shoveling into drums. Do not tighten the bungs. Mixing with wet earth is also effective, but slower.

## **SECTION VII – HANDLING AND STORAGE**

**Handling** avoid personal contact with the product or reaction mixture. Use only with adequate ventilation to ensure that the defined occupational exposure limit is not exceeded. The efficiency of the ventilation must be monitored regularly because of the possibility of blockage. Avoid breathing aerosols, mists and vapors. When the product is sprayed or heated, an approved MSHA/NIOSH positive-pressure, supplied-air respirator may be required.

**Storage Requirements:** Keep containers properly sealed and when stored indoor, in a well ventilated area. Keep contents away from moisture. Due to reaction with water, producing CO<sup>2</sup> -gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Do not reseal contaminated containers!! Uncontaminated containers, free of moisture, may be resealed only after placing under a nitrogen blanket. Do not store in containers made of copper, copper alloys or galvanized surfaces.

**Storage Temperature:** Ideal storage temperature is 16-38°C (60-100°F).

- Keep stocks of decontaminant (See Section VI) readily available.

## SECTION VIII – EXPOSURE CONTROLS / PERSONAL PROTECTION

### PREVENTATIVE MEASURES:

Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

**Engineering Controls:** Use local exhaust ventilation to maintain airborne concentrations below the TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it. For general guidance on engineering control measures refer to the ACGIH publication "Industrial Ventilation."

### Personal Protective Equipment:

**Eye Protection:** Chemical safety goggles. If there is a potential for splashing, use a full-face shield.

**Skin Protection:** The following protective materials are recommended: Gloves –neoprene, nitrile-butadiene rubber, butyl rubber. Thin disposable gloves should be avoided for repeated or long-term use. Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective clothing" published by ACGIH.

### EXPOSURE GUIDELINES:

Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended. Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with this product. Once a person is diagnosed as sensitized, no further exposure to the material that caused the sensitization should be permitted.

### HAZARDOUS INGREDIENT(S):

#### 4,4'-Diphenylmethane Diisocyanate:

ACGIH TLV	0.005 ppm (8-hour, 40 hours/week)
OSHA PEL CEILING	0.02 ppm
NIOSH REL/TWA	0.005 ppm (10-hour, 40 hours/week)
NIOSH REL/CEILING	0.02 ppm (10-minute)

NOTE: The Occupational Exposure Limits listed for isocyanates do not apply to previously sensitized individuals.

## SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

Alternate Name(s): Not applicable.

Chemical Name: Not applicable (mixture).

Chemical Family: Diisocyanate.

Molecular Formula: Not applicable (mixture).

Appearance: Clear liquid.

Odor: None.

Odor Threshold (ppm): 0.4 (4,4'-Diphenylmethane Diisocyanate)

PH: Not applicable.

FlashPoint: >230°F (110°C)

Vapor Pressure (mm Hg at 20°C): Approx.  $4 \times 10^{-6}$

Vapor Density (Air=1): 8.5 approx.

Boiling Point: Not applicable

Melting Point: Not available

Solubility (Water): (Reacts with water)

Solubility (Other): Soluble in most organic solvents

Specific Gravity: 1.1549

Evaporation Rate: Not available

## SECTION X – STABILITY AND REACTIVITY

**Hazardous Decomposition Products:** Highly unlikely under normal industrial use. See Section 5.

**Chemical Stability:** Stable at room temperature.

**Conditions to Avoid:** Avoid high temperatures. Avoid freezing.

**Incompatibility with other Substances:** This product will react with any materials containing active hydrogens such as water, alcohol, amines, bases or acids. The reaction with water is very slow under 50°C (122°F) but is accelerated at higher temperatures.

**Hazardous Polymerization:** Polymerization may occur at elevated temperatures in the presence of alkalis, tertiary amines and metal compounds.

## SECTION XI – TOXICOLOGICAL INFORMATION

### **TOXICOLOGICAL DATA:**

#### **Polymeric MDI:**

Oral LD50 (rat) > 5,000 mg/kg

Dermal LD50 (rabbit) > 5,000 mg/kg

Inhalation LC50 (rat) = 490 mg/m<sup>3</sup>/4H (respirable aerosol)

### **POTENTIAL HEALTH EFFECTS:**

**Inhalation:** This product is a respiratory irritant and potential respiratory sensitizer. Repeated inhalation of vapor or aerosol at levels above the occupational exposure limit could cause respiratory sensitization. Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons.

**Skin Contact:** Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization. Animal studies have shown that respiratory sensitization can be induced by skin contact with known respiratory sensitizers including diisocyanates. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

**Eye Contact:** The aerosol, vapor or liquid will irritate human eyes following contact.

**Ingestion:** Ingestion may cause irritation of the gastrointestinal tract. Based on the oral LD50, this product is considered practically non-toxic by ingestion.

**Chronic Effects:** A study was conducted where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol. Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different from controls. Only at the top level (6 mg/m<sup>3</sup>), there was a significant incidence of a benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). There were no lung tumors at 1 mg/m<sup>3</sup> and no effects at 0.2 mg/m<sup>3</sup>. The increased incidence of lung tumors is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

There are reports that chronic exposure may result in permanent decrease in lung function.

**Carcinogenicity:** The ingredients of this product are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.

**Mutagenicity:** There is no substantial evidence of mutagenic potential.

**Reproductive Effects:** No adverse reproductive effects are anticipated.

**Teratogenicity and Fetotoxicity:** No birth defects were seen in two independent animal (rat) studies. Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother. Fetotoxicity was not observed at doses that were not maternally toxic. The doses used in these studies were maximal, respirable concentrations well in excess of the defined occupational limits.

## SECTION X II – ECOLOGICAL INFORMATION

**Environmental Fate and Distribution:** It is unlikely that significant environmental exposure in the air or water will arise, based on consideration of the production and use of the substance.

**Persistence and Degradation:** Immiscible with water but will react with water to produce inert and non-biodegradable solids.

**Toxicity:** Polymeric MDI.

LC0 (Zebra Fish) > 1000 mg/l

EC50 (Daphnia magna) (24 hour) > 1000 mg/l

EC50 (E. Coli) > 100 mg/l

## SECTION X III – DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimized wherever possible.

Disposal should be in accordance with local, state, provincial or national regulations. This material is not a hazardous waste under RCRA 40 CFR 261. Small quantities should be treated with a decontaminant solution (See Section 6). The treated waste is not a hazardous material under RCRA 40 CFR 261. Chemical waste, even small quantities, should never be poured down drains, sewers or waterways.

Empty containers should be decontaminated and either passed to an approved drum recycler or destroyed.

## SECTION XIV – TRANSPORT INFORMATION

**Dot:** Single containers less than 5,000 lbs. are not regulated.

Single containers with 5,000 lbs. or more of 4,4'-MDI are regulated as: Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082. PGIII, RQ.

**Transportation Emergency Telephone Number:** 1-800-424-8300 (CHEMTREC)

**TDG:** Not Regulated

**IMO:** Not Regulated.

**IATA/ICAO Class:** Not regulated

## SECTION XV – REGULATORY INFORMATION

**USA CLASSIFICATION:**

**OSHA Classification:**

- **Physical:** Not regulated
- **Health:** Highly toxic. Respiratory sensitizer. Skin sensitizer. Irritant
- **Target Organ:** Respiratory tract. Skin.

**TSCA (Toxic Substances Control Act) Regulations:** All ingredients are on the TSCA Chemical Substance Inventory.

**EPCRA Section 313 (40 CFR 372):** This product contains the following chemical(s) subject to reporting requirements: approx. 32% 4,4'-MDI.

**CERCLA (Comprehensive Environmental Response, Compensation and Liability Act):** 4,4'-Methylene Diphenyl Diisocyanate (CAS 101-68-8) has a 5,000 lb. RQ (reportable quantity). Any spill or release above the RQ must be reported to the National Response Center (800-424-8802). The % of 4,4'-MDI in this product is listed in Section 2 of this MSDS.

This product does not contain nor is it manufactured with ozone depleting substances.

**Other Regulations/Legislation which apply to this product:**

Massachusetts Right-to-Know, Pennsylvania Right-to-Know, New Jersey Right-to-Know, CERCLA.

**CANADIAN CLASSIFICATION:**

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all the information required by the CPR.

Controlled Products Regulations (WHMIS) Classification: D-1A: Very Toxic (acute effects). D-2A: Very Toxic. D-2B: Toxic.

CEPA / Canadian Domestic Substances List (DSL): This product contains substance(s) not on the Canadian Domestic Substances List (CEPA DSL), environmental notification may be required.

#### **SECTION XVI – OTHER INFORMATION**

Glossary:	ACGIH -	American Conference of Governmental Industrial Hygienists.
	IARC -	International Agency for Research on Cancer
	NTP -	National Toxicology Program
	OSHA -	Occupational Safety and Health Administration

**FOR YOUR PROTECTION:** The information and recommendations in this publication are, to the best of our knowledge, reliable.

The toxicity and risk characteristics of products made by ICI Polyurethanes Group will necessarily differ from the toxicity and risk characteristics that occur when such products are used with other materials during a manufacturing process. The resulting risk characteristics should be determined and made known to ultimate end-users and processor. ICI Polyurethanes Group MAKES NO WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

**GLOBAL Encasement, Inc.**  
**Technical Data**  
**GE-50**

**7/9 Waterproof protective membrane**  
**Revised March 1999**

**TYPICAL PHYSICAL PROPERTIES**

<b>TYPICAL PHYSICAL PROPERTIES</b>		
<b>Solids</b>	<b>WET</b>	
	By weight	100%
	By volume	100%
	<b>V.O.C.</b>	0
	Coverage	16 dry mils/100 sq.ft./gal
	Weight per gal	(4 kg) 9 lbs Combined
<b>Viscosity</b>	<b>A component mPa s/cps</b>	500 @ 25°C (77°F)
	<b>B component mPa s/cps</b>	500 @ 25°C(77°F)
<b>Cure times</b>	<b>Gel</b>	Less than two seconds
	<b>Tack Free</b>	8 ~ 12 seconds
	<b>Post cure</b>	12 hours
	<b>Recoat</b>	0 -12 hours
	<b>Flash point</b>	260°C (500°F)
	<b>Shelf life</b>	1 Yr @ 15-30°C (60-90°F)
	<b>Clean up solvent</b>	Xylol or MEK
	<b>Thinner</b>	Not used
	<b>DRY</b>	
	<b>Stress/Tensile strength</b>	17 mPa (2500 PSI ± 100
	<b>Elongation @ 25°C (77°F)</b>	265% ± 50
	<b>Permeability MVT @ 0.8mm (30 mils)</b>	1.4 ng/Pa s m <sup>2</sup> (0.024 Perma)
	<b>Hardness</b>	50 ± 5 shore D
	<b>Hardness</b>	50 ± 5 shore A
	<b>100% Modulus</b>	11 mPa (1600 ± 100 PSI)
	<b>Tear resistance</b>	3 mPa (430 ± 50 PLI)
	<b>With geotextile fabric</b>	Exceeds 4 mPa (600 PLI)
	<b>Weatherability</b>	no evidence of failure after
	<b>Service temperature</b>	2000 hrs (Xenon Arc)
	<b>Abrasion resistance, (1 kg,</b>	-50°C to 150°C (-60°F to 300°F)
	<b>1000 rev, H-18 wheels)</b>	110 mg lost
<p style="text-align: center;">Astm TEST METHODS Available</p> <p style="text-align: center;">Samples for tests sprayed w/Gusmer H-II @ 7 kPa (1000 PSI)</p> <p style="text-align: center;">Primaries/Hose Heat 60 °C (140 °F) D Gun w/62 chamber.</p>		

\* The data presented herein is not intended for use by nonprofessional applicators, or those persons who do not purchase or utilize this product in the normal course of their business.

The potential user must perform any pertinent test in order to determine the product's performance and suitability in the intended application, since final determination of fitness of the product of any particular use is the responsibility of the buyer.

The aforementioned data on this product is to be used as a guide and is subject to change without notice.

The information herein is believed to be reliable, but unknown risks may be present. No warranties, express or implied, including patent warranties or warranties of merchantability or fitness for use, are made by GLOBAL Encasement, Inc. with respect to products or information set forth herein. Nothing contained herein shall constitute permission or recommendation to practice any invention covered by a patent without a license from the owner of the patent.

Accordingly, buyer assumes all risks whatsoever as to the use of these materials and buyer's exclusive remedy as to any breach of warranty, negligence, or other claim shall be limited to the purchase price of the materials. Failure to adhere to any recommended procedures shall relieve GEI of all liability with respect to the materials and the use thereof.

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**1-800-266-3982**

**CHEMTREC**  
**EMERGENCY NUMBER**  
**1-800-424-9300**

- **EYE PROTECTION:**  
Safety glasses, goggles, or a face shield are recommended.
- **SKIN PROTECTION:**  
Chemical resistant gloves are recommended. Cover as much of the exposed skin area as possible with appropriate clothing.
- **RESPIRATORY PROTECTION:** Use a respirator approved for isocyanates and organic vapors. Consider the application and environmental concentrations in deciding if additional protective measures are necessary.
- **INGESTION:** Do not take internally. It is believed ingestion of polymeric isocyanates would not be fatal to humans, but may cause inflammation of mouth and stomach tissue.
- **OTHER INFORMATION AVAILABLE:**
- **ASTM Test Methods**
- **Chemical Resistance chart**
- **Wet concrete primer study**
- **Primer data for various substratum**
- **OEM mold releases**
- **Adhesion Test Results**
- **Potential uses list**



# C-40 LV EPOXY/POLYSULFIDE SEALER

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**PRODUCT DESCRIPTION:** Specco C-40 LV Epoxy Polysulfide Sealer is a two component, epoxy/polysulfide resin compound designed to penetrate, fill and protect horizontal concrete surfaces. C-40 LV provides improved wear, impact and chemical resistance and minimizes absorption of water and chlorides into the concrete. C-40 LV is used on bridge seats and decks, parking decks and industrial floors.

**BENEFITS:** PROVIDES MAXIMUM PENETRATION...EXCELLENT CHEMICAL, IMPACT AND ABRASION RESISTANCE...REDUCES WATER AND CHLORIDE ABSORPTION.

**COMPOSITION:**

Part A:	Modified epoxy with solvent
Part B:	Polysulfide polymer with tertiary amine and solvent

PHYSICAL DATA:	PHYSICAL DATA:	PROPERTIES @ 25 DEGREES C
	Color Part A:	Clear
	Color Part B:	Amber
	Mixing ratio:	1:1 by volume
	Viscosity (mixed):	200 cps
	Pot life:	2 hours
	Initial cure:	8 hours
	Solids:	50% minimum
	Combustible liquid	UN 1256

**SURFACE PREPARATION:** Surfaces must be structurally sound, clean, dry and free of dust, dirt, oils, salts, laitance and other contaminants. Remove defective concrete, cavities, cracks, voids and other defects by routing to sound material. Sandblast, shotblast or acid etch surfaces to provide a clean, absorptive substrate.

**MIXING:** Pre-mix Specco C-40 LV part A and part B separately. Combine one part of part A base, to one part of part B hardener, in a clean container and mix thoroughly using a slow speed motor and paddle mixer. Scrape the sides and bottom of the container during mixing. Do not aerate mix. Allow the mixed material to stand for one hour induction time.

**DIRECTIONS FOR USE:** Apply C-40 LV by brush, roller or airless spray in two coats. The first coat must be completely dry before the second coat is applied. Do not puddle the material. For slip resistance, uniformly broadcast emery, flint, quarts or silica into the freshly placed C-40 LV. After the coating has set, sweep or vacuum excess aggregate from the surface and apply the second coat of C-40 LV. Protect the coating from traffic, dust and rain until the material has sufficiently set.

**COVERAGE:** Approximately 100-250 square feet per gallon

**CAUTIONS:** Do not apply C-40 LV in temperatures below 60 degrees F or to frozen, frost filled or damp surfaces. Do not apply when rain is forecasted within twenty four hours of application. C-40 LV is a combustible liquid. Keep away from heat, sparks and open flame. Use with adequate ventilation. C-40 LV contains an alkaline amine. Avoid breathing vapors and prolonged contact with the skin. Do not apply to bearing areas of bridge beam seats.

**PACKAGING:** 2 & 10 gallon units

**STORAGE:** 60 to 90 degrees F

**SHELF LIFE:** 2 year properly stored

**FREIGHT CLASS:** Class 65

**LIMITED WARRANTY:** This product is warranted to be of merchantable quality when used according to the instruction herein. It is not warranted to be suitable for any purpose or use other than the general purpose for which it is intended. Liability under this warranty is limited to the replacement of

the product as purchased, if found to be defective upon inspection by the manufacturer. This limited warranty is issued and accepted in lieu of all other expressed warranties and explicitly excludes liability for consequential damages. Buyer assumes all risk and liability resulting from the use of this product.

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**Specco Industries, Inc.** established in 1972, is a Chicago based manufacturer of specialty products designed to solve problems related to concrete and masonry. Our product groups include:

<b>Accelerators</b>	<b>Admixtures</b>
<b>Bonders</b>	<b>Cleaners</b>
<b>Epoxies</b>	<b>Form Releases</b>
<b>Grouts</b>	<b>Coatings</b>
<b>Patching</b>	<b>Sealers</b>
<b>Surface Treatments</b>	<b>Water Repellents</b>

Specco markets products to the professional contractor through selective distribution throughout the United States and abroad. Typical distributors include Specialty concrete supply companies, Brick & Masonry Supply Companies, Utility Supply Companies, Ready Mix Concrete Producers and Commercial Paint Suppliers. We also directly supply our products to OEMs, such as Precast and Ornamental Concrete Producers.

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